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Published in:
Innovation in Aging

DOI:
[10.1093/geroni/igaa023](https://doi.org/10.1093/geroni/igaa023)

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version
Publisher's PDF, also known as Version of record

Publication date:
2020

[Link to publication in University of Groningen/UMCG research database](#)

Citation for published version (APA):

Kunz, L. K., Scheibe, S., Wisse, B., Boerner, K., & Zemlin, C. (2020). Dementia as fixed or malleable: Development and validation of the dementia mindset scale. *Innovation in Aging*, 4(4), [igaa023]. <https://doi.org/10.1093/geroni/igaa023>

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Original Research Article

Dementia as Fixed or Malleable: Development and Validation of the Dementia Mindset Scale

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Received: January 19, 2020; Editorial Decision Date: May 28, 2020

Decision Editor: Laura P. Sands, PhD, FGSA

Abstract

Background and Objectives: Care professionals differ in how they experience and respond to dementia caregiving. To explain such differences, we developed a new measure: the Dementia Mindset Scale. This scale captures the extent to which care professionals view dementia as stable and fixed (akin to the biomedical perspective) or as flexible and malleable (akin to the person-centered approach).

Research Design and Methods: We conducted four studies to develop the scale. We tested items for comprehensibility, assessed the scale's factorial structure and psychometric properties, and investigated its predictive validity for care professionals' well-being.

Results: A new scale with a two-factor structure—distinguishing a malleable dementia mindset from a fixed dementia mindset—was developed. Results showed good convergent and divergent validity. Moreover, the dementia mindsets predicted aspects of job-related well-being in care professionals.

Discussion and Implications: The scale allows for the assessment of individual differences in how care professionals see dementia. This insight can be used to improve interventions aimed at enhancing care professionals' well-being and quality of care.

Translational Significance: The Dementia Mindset Scale measures whether care professionals view dementia (symptoms) as fixed or malleable. The scale can be used to identify training opportunities and evaluate the effectiveness of mindset-based intervention modules.

Keywords: Care professionals, Formal caregiving, Nursing homes, Person-centered care, Well-being

The World Health Organization (WHO) declared dementia as a public health priority (WHO, 2015). Although a growing body of research contributes to a better understanding of risk factors of dementia and a reduction in dementia prevalence in industrialized countries (Langa et al.,

2017), dementia care will remain a dominant issue in the global context of public health (WHO, 2019). Care needs of persons with dementia can be immense, not only as an economic burden for society (Cantarero-Prieto et al., 2019), but dementia caregiving has been shown to be particularly

demanding, putting care professionals at risk for adverse effects on health and well-being (Schulz et al., 1995). Among care professionals, job-related well-being is a particularly important outcome to consider, as it has been shown to affect job performance (Judge et al., 2001), turnover intentions (Brunetto et al., 2013), absenteeism (Davey et al., 2009), and affective organizational commitment (Meyer & Maltin, 2010). The extent to which dementia caregiving is handled effectively both in terms of the experiences of persons with dementia and their caregivers may, among other aspects, be influenced by how care professionals think about dementia.

Care professionals can have varying perspectives on dementia. Some may believe that persons with dementia are inevitably negatively affected by dementia symptoms, facing constant progression of the disease as a result of pathological changes (i.e., biomedical perspective on dementia; Lyman, 1989). Others may think that despite the neurodegenerative changes in pathology, the occurrence and progression of dementia symptoms are context-dependent and can be influenced by care professionals' responses or adjustments of the care setting. Care professionals endorsing the latter perspective may, for example, believe that the impact or progression of the dementia symptoms can be reduced or slowed down through meaningful interactions and activities and may adapt their behavior toward the person with dementia (i.e., person-centered approach; Kitwood, 1997).

These two different views about dementia map onto mindset theory (Dweck & Leggett, 1988), which holds that people differ in their implicit theories about the nature of human attributes. These implicit theories, or mindsets, shape people's judgments, feelings, and behavioral responses in situations where such attributes matter (Dweck et al., 1995). Studies on different applications of mindset theory suggest that mindsets can have substantial effects on human functioning ranging from performance on memory tasks (Plaks & Chasteen, 2013), to mental health (Schroder et al., 2016), weight loss (Burnette et al., 2017), academic success (Ortiz Alvarado et al., 2019), and job performance (Zingoni & Corey, 2017). Moreover, previous studies have linked mindsets to affective well-being and life satisfaction (King, 2017), depression (Ford et al., 2018), and future psychological distress (Schroder et al., 2019). Specifically, holding a fixed mindset (believing that attributes are set and unchangeable) is generally more detrimental to well-being than holding a malleable mindset (believing that attributes can change and adapt; Dweck & Leggett, 1988; van Tongeren & Burnette, 2018). For example, a fixed (compared with a malleable) mindset about emotions predicts lower levels of positive affect, higher levels of depression, and lower general well-being (arguably due to the impact of mindsets on emotion regulation self-efficacy; Tamir et al., 2007). Importantly, mindsets can be influenced or changed in such a way that they facilitate desirable outcomes (Donohoe et al., 2012). There is ample evidence showing that mindsets can be modified through well-designed interventions (Yeager et al., 2016).

Mindset theory has not yet been applied to dementia care. Given the power of mindsets demonstrated in other studies on work-related well-being, we believe that understanding dementia mindsets of care professionals may help to explain why some care professionals are able to maintain well-being and thrive at work, while others struggle in this regard. The current study was designed to develop a valid and reliable scale that assesses dementia mindsets in care professionals and to provide initial evidence that the scale predicts facets of job-related well-being.

Mindset Theory and Its Application to Dementia

According to mindset theory, people have implicit theories or mindsets about human functioning that affect their judgments, emotional reactions, and behavior (Dweck & Leggett, 1988; Dweck et al., 1995; Plaks & Chasteen, 2013; Schroder et al., 2016). These mindsets, either malleable or fixed, indicate how individuals evaluate human attributes, such as intelligence, memory performance, anxiety, or depression. A person with a malleable mindset perceives attributes as variable or changeable. In contrast, a person with a fixed mindset sees characteristics as stable or unchangeable. Under a fixed mindset, the behavior is attributed to personal, stable characteristics, which provides certainty and predictability. However, in the face of challenges or setbacks, a fixed mindset leads to quick, global trait judgments as reasons for negative outcomes, which induce helpless responses (e.g., depression, diminished motivation, and lowered self-efficacy; Robins & Pals, 2002). In contrast, a malleable mindset takes situational or contextual variables into account, which offers a more complex though less predictable reality. In face of setbacks, a malleable mindset induces a mastery orientation and fosters motivation (Dweck et al., 1995), because it engenders a focus on factors or strategies that can affect a particular outcome. Notably, mindsets are domain-specific; mindsets about one specific attribute affect people's thoughts, feelings, and behavior mainly in attribute-relevant situations (Dweck et al., 1995; Hughes, 2015; Schroder et al., 2016).

Mindset theory can be fruitfully applied to perceptions of dementia. Indeed, fixed and malleable mindsets align well with common perceptions of dementia symptoms, their progression, and their impact on the quality of life as either unchangeable or modifiable. Some care professionals may feel that the progression of dementia is inevitable as are its effects and that the main solutions to alleviate them are pharmacological interventions (Kerns et al., 2018). This perception aligns with a biomedical approach to care (Lyman, 1989). We see this perception of dementia as representing a fixed mindset. We would expect that in dementia care situations, in which a person with dementia shows behaviors that challenge (e.g., agitated behavior), a fixed dementia mindset results in helpless behavior of care professionals.

The person-centered perspective on dementia is characterized by respect for individuality and interpersonal interactions that focus on meeting psychological needs for comfort, occupation, identity, inclusion, and attachment (Kitwood, 1997), rather than on the clinical aspects associated with a dementia diagnosis. This perspective entails the belief that the speed of progression of dementia and its effects on a person's life can be altered through the actions of the care professional or adjustments of the environment (Chaudhury et al., 2018). In this mindset, care professionals interpret behavior that challenges from persons with dementia as a cue that the person has unmet needs, which should be responded to by trying to identify and accommodate the need (James, 2011). We see this perception of dementia as representing a malleable mindset. We would expect that in the face of setbacks, a malleable dementia mindset induces a mastery orientation and therefore leads to an evaluation of potential interventions focused on meeting the needs of the person with dementia.

Importantly, neither dementia mindset is more "correct" or "valid" than the other. In both mindsets, dementia is seen as a pathologically progressive and degenerative disease. However, whereas a fixed dementia mindset focuses on lack of control associated with the inevitability of disease progression, a malleable dementia mindset is characterized by the belief that it is possible to change the impact and speed of disease progression as well as the influence on experienced quality of life despite the diagnosis.

Dementia Mindsets and Care Professionals' Well-Being

As discussed earlier, research generally demonstrates mindsets' impact on well-being. In line with those findings, we assumed that a malleable dementia mindset would foster the belief in care professionals that dementia and its effects on the person can be influenced. This underlying belief may result in hope and optimism, both of which are affective states that are positive in nature and may increase feelings of well-being (Scheier & Carver, 1992), job satisfaction (Duggleby et al., 2009), and level of engagement at work (Kahn, 1990). It may also facilitate confidence in one's own competence in dementia care (Schepers et al., 2012) and the belief that one is able to deal with emerging stressors at work (Chana et al., 2015). Therefore, we expected that a malleable mindset would be positively related to care professionals' job-related well-being. In contrast, we expected that a fixed dementia mindset would negatively predict well-being, as changes in dementia symptoms and its effects are perceived to occur mainly as a result of pharmacological interventions, whereas the behavioral effort of care professionals is deemed irrelevant. Therefore, individuals with a fixed dementia mindset may feel less hopeful and optimistic and thus less well, less satisfied, more burned-out, and less confident in their own competence in dementia care.

Current Study: Definition of Dementia Mindsets and Scale Development

Based on the above-mentioned conceptualization of mindsets and our review of the dementia care field, we define a fixed dementia mindset as *the belief that the expression and progression of dementia symptoms, and how the expression and progression of dementia symptoms impacts on that person's quality of life are attributes that cannot be influenced by the external (social or physical) context*. We define a malleable dementia mindset as *the belief that the expression and progression of dementia symptoms, and how the expression and progression of dementia symptoms impacts on that person's quality of life are attributes that can be influenced by the external (social or physical) context*. These definitions take into account that dementia symptoms are not only characterized by their severity at a certain time (status) but also by their development over time (process). Moreover, they address how symptoms affect the quality of life and the impact that the environment may have. By applying mindset theory we hope to capture individual differences in care professionals, which in turn may help to predict care professionals' work outcomes.

Overview of Studies

Following recommendations by Hinkin (1995), we developed the Dementia Mindset Scale across several studies with German care professionals. First, we generated items and investigated the initial set of items and their content adequacy in a small sample of part-time students of a multidisciplinary care provision master's program (Study 1, $N = 16$). Furthermore, we assessed the items' comprehensibility in the target population of care professionals (Study 2, $N = 11$). Next, we evaluated the underlying factor structure and made a final selection of items, followed by the assessment of convergent and discriminant validity based on an online study with care professionals in Germany (Study 3, $N = 203$). Lastly, we evaluated model fit, internal consistency, as well as predictive validity of the new Dementia Mindset Scale in a study of care professionals of a long-term care agency with facilities across Germany (Study 4, $N = 204$). More information on the methodology of each study is provided in the following sections.

The Ethics Committee of the Department of Psychology at the University of Groningen approved all studies reported in this article. Participants were informed about their rights; consent was obtained either in verbal or written form prior to study participation. Specifically, it was emphasized that participation is voluntary, that responses will be accessible only to the research team, and that data will be used for scientific purposes only. All studies were conducted in Germany and we used the German language in the construction of study materials. Both English and German versions of the final scale are provided in the [Supplementary Appendix](#).

Study 1: Generation of Items and Content Adequacy

First, we formed a team of scholars and experienced practitioners with shared expertise in mindset theory and the person-centered care approach to generate an initial pool of items consistent with the deductive approach (Hinkin et al., 1997). During item generation, we made sure to capture each aspect of our definitions of dementia mindsets and applied existing measures from mindset theory studies (Dweck et al., 1995) to the context of dementia care. The first three authors generated a pool of items, which was reviewed by all authors several times, making sure that poorly worded items were rewritten or eliminated, clear duplicates were removed, and items that did not map onto the definitions were deleted. This process resulted in 30 initial items (15 items per mindset). Each subscale contained items that addressed the expression, the progression, and the impact on the quality of life of dementia.

Next, we investigated content adequacy to ensure that our measure complied with the definitions of fixed and malleable mindsets. The initial pool of items was presented to 16 students of a master program on multiprofessional care for persons with dementia. Most students were middle-aged ($M_{\text{age}} = 44.5$ years, $SD = 9.85$; 86.7% female) and completed the program part time next to their regular job. Respondents were approached in class and asked to fill out a paper-and-pencil questionnaire that started with a description of the definitions of fixed and malleable mindsets; the order of the two definitions was varied across participants. Respondents were then asked to indicate how well each item represented each definition (0 = *not at all*, 4 = *very well*), resulting in two scores per item. Before completing the questionnaire, participants were informed that participation was voluntary and no incentives were offered.

Items were retained if they had a mean representativeness score on the intended construct of at least 3.0, thus indicating a good and very good fit to the corresponding definition and a mean representativeness score on the other construct below 3.0, as these responses indicate an inappropriate fit of the item to the other definition. Based on this criterion, seven items were excluded. The resulting 23 items all differed significantly in the extent to which they represented fixed and malleable definitions ($M_{\text{difference}} = 2.99$, all $ps < .01$), suggesting that they uniquely represented one mindset and not the other.

Study 2: Comprehensibility

We asked respondents of our target population, namely, 11 care professionals employed at a German nursing home, to assess the items for comprehensibility. Respondents attended an on-site training session on dementia care and had experience with providing care for persons with

dementia. The respondents were the participants of one randomly selected training session that all employees working in dementia care in one of the care facilities (about 36 at the time) were required to attend. Prior to conducting the study, we solicited the approval and support of the nursing home work council composed of staff delegates (note that it is customary in Germany for companies across industries to have a work council consisting of staff delegates who are not union representatives). A condition for approval was that no demographic information would be collected. The trainer distributed the paper-and-pencil 23-item questionnaire after introducing the study as well as emphasizing that participation is voluntary. The trainer and the employees had no formal relationship outside the training, which rules out any evaluation criteria or power differential in these relationships. Respondents were asked to indicate how comprehensible each item was (1 = *not at all*, 5 = *completely*). Items were to be removed if their comprehensibility scores were below 4.0. Testifying to the clarity of the items, all comprehensibility scores were above 4.0 (ranging from $M = 4.1$, $SD = 1.56$ to $M = 4.8$, $SD = 0.63$), so no items had to be deleted.

Study 3: Factor Structure, Item Reduction, and Construct Validity

The goal of Study 3 was to assess factorability, reduce the number of items based on the results of exploratory factor analyses, and assess convergent and discriminant validity. To determine construct validity of the Dementia Mindset Scale, we investigated if there were significant and at least moderate correlations (Hinkin et al., 1997) with similar constructs (i.e., attitudes toward dementia). To establish discriminant validity, we determined if our scale had weak or nonexistent associations with a theoretically different construct (memory performance mindset).

Participants and procedure

A total of 235 professionals in dementia care participated in this study. Thirty-two participants were excluded (e.g., due to more than 10% missing values or lack of contact with persons with dementia) leaving 203 cases for analysis. The average age was 46.45 years ($SD = 11.49$; range 20–75) and 91.1% were female. Care professionals had an average tenure of 11.61 years ($SD = 9.48$) and 41.9% worked full time. Participants were certified nurses (42.4%), direct care workers (19.7%), therapeutic and recreational staff (15.3%), social workers, case managers, counselors or gerontologists (17.3%), or other (5.4%; such as medical doctors or people in management positions). The educational background ranged from Grade 10 or less (39.3%), to high school graduate (20.7%), practical training (10.3%), and college graduate or higher (27.1%).

An online questionnaire was distributed via the newsletter of the German Alzheimer Association ($N = 40$) and a Facebook group created for care professionals ($N = 163$). After reporting demographics, participants were presented with a series of measures including the Dementia Mindset Scale, in which they were asked to rate their agreement with each of the 23 items (1 = *strongly disagree*, 5 = *strongly agree*). Participants further completed several measures to assess convergent and discriminant validity, as described later.

Factorability and exploratory factor analysis

Data of the Dementia Mindset Scale were appropriate for factor analysis, as evidenced by a Kaiser–Meyer–Olkin index of 0.77 (higher than the 0.6 cutoff value), and a significant Bartlett's test of sphericity ($\chi^2 (253) = 1136.22$, $p < .01$; Tabachnick & Fidell, 2014).

A principal component analysis (PCA) revealed six factors with an eigenvalue greater than 1. However, visual inspection of the scree plot clearly suggested a two-factor structure (Cattell, 1966). This was supported by the results of Parallel Analysis, which showed that two components should be retained and that the rest of the factors were noise in the data (Monte Carlo PCA: Watkins, 2000). Next, we performed an exploratory factor analysis according to the principle axis method with direct Oblimin rotation. The two-factor solution explained 25.52% of the variance. Factor 1 represents the fixed dementia mindset. Corresponding items showed factor loadings ranging from 0.41 to 0.72 with cross-loadings ranging from -0.14 to 0.14 . Factor 2 represented the malleable dementia mindset with factor loadings ranging from 0.15 to 0.56 and cross-loadings ranging from -0.21 to 0.11 . Communalities of all items range from 0.07 to 0.51. These results suggested that some items should be dropped from the scale (see below).

Item reduction

Nine items with factor loadings lower than 0.40 and cross-loadings greater than 0.20 were deleted one at a time. Next, an exploratory factor analysis with the remaining items was conducted. Based on communalities of less than 0.2, two additional items were deleted. The remaining 12 items were used as the final measure of six items per factor (Table 1). Note that this number fulfills the criteria of having at least four to five items per subscale to assure internal consistency (Hinkin et al., 1997). Results of the exploratory factor analysis according to the principle axis method with direct Oblimin rotation of the final Dementia Mindset Scale suggested a two-factor solution and explained 34.89% of the variance.

Convergent validity

Measures.—*Attitudes toward dementia* were measured by the Personhood in Dementia Questionnaire (PDQ; Hunter et al., 2013) and the Dementia Attitude Scale (DAS; O'Connor & McFadden, 2010). The PDQ was developed to assess the extent to which a person embraces (aspects of) the person-centered care perspective on dementia. It consists of 20 items ($\alpha = 0.86$) assessing an individual's perception of personhood in persons with dementia on a scale from 1 (*strongly disagree*) to 5 (*strongly agree*); a higher mean score indicates a greater sense of personhood. The DAS measures general attitudes about dementia on a 20-item scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree*) with a higher score representing more positive attitudes about dementia and interacting with people with dementia. One item (*I cannot imagine caring for someone with dementia*) was removed because individuals were specifically recruited based on their caregiving function. The remaining 19 items had good

Table 1. Factor Loadings of Final Items Based on Exploratory Factor Analyses (Study 3) and Confirmatory Factor Analysis (Study 4)

Item/Factor	Exploratory factor analysis, Study 3		Confirmatory factor analysis, Study 4	
	Fixed mindset	Malleable mindset	Fixed mindset	Malleable mindset
1	0.55	0.06	0.56	0
2	0.70	0.07	0.52	0
3	0.63	-0.04	0.51	0
4	0.72	-0.02	0.72	0
5	0.64	-0.02	0.68	0
6	0.49	-0.17	0.57	0
7	-0.09	0.45	0	0.53
8	-0.11	0.46	0	0.68
9	0.05	0.58	0	0.58
10	0.06	0.66	0	0.71
11	0.05	0.58	0	0.51
12	-0.02	0.48	0	0.35

Note: Exploratory factor analysis results report factor loadings after rotation (direct Oblimin). For item wording, refer to [Supplementary Appendix](#).

reliability ($\alpha = 0.78$). For both scales, we expected positive correlations with the malleable dementia mindset and negative correlations with the fixed dementia mindset. The malleable, but not the fixed, dementia mindset entails aspects of the person-centered perspective on dementia and is likely to boost attitudes about dementia and interacting with people with dementia.

Results.—Table 2 presents that, as expected, the malleable dementia mindset was positively related to the dementia attitude scales (PDQ: $r = 0.46$, DAS: $r = 0.43$). The fixed dementia mindset was negatively related to the PDQ ($r = -0.21$) but unrelated to the DAS ($r = -0.05$). Therefore, participants who scored higher on the malleable mindset scale were more likely to value personhood in persons with dementia and had more positive attitudes toward them. In contrast, care professionals who scored higher on the fixed mindset were more likely to perceive persons with dementia primarily as diagnosed individuals with no association to general attitudes toward dementia. Although the Dementia Mindset Scale shows overlap with similar constructs, the associations were not as strong as to suggest redundancy. Especially the fixed dementia mindset measures aspects not covered by existing measures of attitudes toward dementia.

Discriminant validity

Measure.—Participants' *memory performance mindset* was assessed with a six-item measure (Plaks & Chasteen, 2013), responses ranged from 1 (*strongly disagree*) to 5 (*strongly agree*). A higher score indicates a malleable mindset in regard to memory performance, whereas a lower score indicates a more fixed approach to memory performance ($\alpha = 0.77$). Dweck et al. (1995) state that mindsets in one context are distinct from mindsets in another context. Therefore, we expected a weak or no association between the mindset measure of memory performance and the new Dementia Mindset Scale.

Results.—Testifying to the discriminant validity of the Dementia Mindset Scale, and in line with findings of previous research that suggest a domain specificity of mindset measures (Dweck et al., 1995; Hughes, 2015; Schroder

et al., 2016), the fixed and malleable memory performance mindsets and dementia mindsets had weak correlations (malleable dementia mindset: $r = 0.26$; fixed dementia mindset: $r = -0.23$).

Study 4: Scale Evaluation and Predictive Validity

In Study 4, we evaluated the new scale (final 12-item Dementia Mindset Scale, see [Supplementary Appendix](#)) according to its model fit, internal consistency, and predictive validity. To determine predictive validity, we investigated the predictive power of dementia mindsets for work-related well-being in care professionals.

Participants and procedure

Participants were 221 care professionals recruited from 23 sites of the same nursing home agency as in Study 2; 17 participants were excluded (due to more than 10% missing values) resulting in a sample size of 204. Participating staff (85.3% female) had an average tenure of 9.3 years ($SD = 8.72$). Age ranged from younger than 19 years to 60 years and older. Participants were primarily professional caregivers such as certified nurses (51.3%) and direct care workers (24.1%). Other care professionals reported to work as therapeutic and recreational staff (18.8%), social workers (1.0%), and in administrative or management positions (4.7%). All care professionals reported to be in contact with persons with dementia at least once a day; the vast majority of care professionals reported a frequency of several times per hour (62.1%) or at least once an hour (36.4%).

The company-wide and site-specific "work councils" (see explanation above) approved the recruitment procedure and distribution of the paper-and-pencil questionnaire. The questionnaire included a written introduction of the study and participants' rights. It was emphasized that participation was voluntary. An addressed envelope for return accompanied each questionnaire to assure confidentiality. After reporting demographics, respondents were presented with the same Dementia Mindset questionnaire as used in Study 3. Additionally, selected work-related well-being measures commonly used in the

Table 2. Means, Standard Deviations, Correlations, and Internal Consistencies of Measures in Study 3

	M	SD	1	2	3	4	5
1. Malleable mindset	4.61	0.39	(0.70)				
2. Fixed mindset	2.34	0.75	−0.29***	(0.79)			
3. PDQ	4.25	0.57	0.46***	−0.21***	(0.86)		
4. DAS	4.30	0.40	0.43***	−0.05	0.82***	(0.78)	
5. Memory mindset	3.56	0.71	0.26***	−0.23***	0.19***	0.13*	(0.77)

Notes: $N = 203$. DAS = Dementia Attitude Scale; PDQ = Personhood in Dementia Questionnaire. Reliability (Cronbach's alpha) is given in brackets along the diagonal. Bold values indicate significant correlations.

* $p < .10$, ** $p < .05$, *** $p < .01$.

healthcare professions were included to assess predictive validity.

Model fit and internal consistency

Evaluation of model fit was based on the results from a confirmatory factor analysis. We investigated two different models and evaluated them based on the goodness of fit index (GFI), comparative fit index (CFI), and root mean square error of approximation (RMSEA). Model 1 followed the proposed two-factor structure of the previously performed exploratory factor analysis and reached a satisfactory model fit ($\chi^2 = 100.793$, $df = 53$, $p < .001$, GFI = 0.920, CFI = 0.906, RMSEA = 0.067). Model 2 was a one-factor model that treated the fixed mindset as bipolar opposite of the malleable mindset but fit the data less well ($\chi^2 = 242.722$, $df = 54$, $p < .001$, GFI = 0.797, CFI = 0.629, RMSEA = 0.131). The difference between the two models was statistically significant ($\chi^2 = 141.929$, $df = 1$, $p < .001$). Thus, we adopted Model 1; the two factors were negatively correlated with each other ($r = -0.38$, $p < .01$). Cronbach's alphas were 0.77 for the fixed dementia mindset scale and 0.73 for the malleable dementia mindset scale, suggesting satisfactory internal consistency of the two subscales.

Criterion-related validity

Our final step included testing the new scale's predictive validity for job-related well-being in care professionals.

Measures.—Four aspects of job-related well-being were considered: job satisfaction, burnout, affective well-being (general and situation-specific), and sense of competence. *Job satisfaction* was assessed with the item "Please indicate how satisfied you were at work within the last 4 weeks" (1 = *very unsatisfied*, 7 = *very satisfied*). *Burnout* was assessed with the Oldenburg Burnout Inventory (OLBI; Demerouti et al., 2003), which has two subscales: Exhaustion (eight items, $\alpha = 0.82$), which covers physical, emotional, and cognitive exhaustion as a result of the exposure to job conditions; and Disengagement (eight items, $\alpha = 0.60$), which assesses participants' focus on work, their commitment, and identification with their work. Responses ranged from 1 = *strongly disagree* to 4 = *strongly agree*. Higher scores on the OLBI subscales indicate higher burnout levels. *Affective well-being* was assessed in two ways. First, we assessed more general affective well-being with the 18-item Job-Related Affective Well-Being Scale ($\alpha = 0.89$, van Katwyk et al., 2000). Participants were asked how often (1 = *never* to 5 = *very often*) they had experienced positive (e.g., happy and calm) and negative (e.g., angry and anxious) emotions at work during the last 4 weeks. Scores on negative items were reverse-coded so that a higher score indicates higher affective well-being at work. Splitting this scale into positive and negative emotions subscales yielded similar results; aiming for a parsimonious display

Table 3. Means, Standard Deviations, Correlations, and Internal Consistencies of Measures in Study 4

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. Age ^a	3.59	1.41	—											
2. Gender ^b	—	—	-0.05	—										
3. Tenure (years)	9.33	8.72	0.34***	0.02	—									
4. Malleable mindset	4.38	0.53	0.01	-0.05	0.05	(0.73)								
5. Fixed mindset	2.50	0.80	-0.16**	-0.09	-0.07	-0.28***	(0.77)							
6. OLBI—disengagement	2.03	0.40	-0.02	0.03	0.14	-0.18***	0.08	(0.60)						
7. OLBI—exhaustion	2.48	0.56	-0.08	0.07	0.27***	-0.02	0.02	0.65***	(0.82)					
8. JAWS	3.40	0.58	0.15**	-0.07	-0.19**	-0.03	-0.01	-0.54***	-0.71***	(0.89)				
9. Positive emotions ^c	3.27	0.58	-0.16**	-0.14	0.04	0.12*	-0.17**	-0.29***	-0.16**	0.21***	(0.78)			
10. Negative emotions ^c	1.39	0.38	-0.00	0.03	-0.09	-0.21***	0.13*	0.34***	0.26***	-0.22***	-0.36***	(0.77)		
11. Job satisfaction	4.55	1.42	0.08	-0.10	-0.04	0.03	-0.04	-0.27***	-0.37***	0.40***	0.05	-0.09	—	
12. SCIDS	3.89	0.40	-0.04	-0.11	-0.03	0.20***	-0.12*	-0.40***	-0.18**	0.25***	-0.28***	0.41***	0.16**	(0.88)

Notes: N = 204. JAWS = Job-Related Affective Well-Being Scale; OLBI = Oldenburg Burnout Inventory; SCIDS = Sense of Competence in Dementia Care. Reliability (Cronbach's alpha) is given in brackets along the diagonal. Bold values indicate significant correlations.

^aAge was assessed in decades (1 = 19 or younger; 6 = 60 or older).

^bGender was coded as 0 = female and 1 = male.

^cPositive and negative emotions refer to affective job-related well-being specific to daily situations in dementia care settings.

* $p < .10$, ** $p < .05$, *** $p < .01$.

of findings, we did not report these. Second, we assessed affective job-related well-being specific to daily situations in dementia care settings. Therefore, five short scenarios were presented to participants who described challenging encounters with clients with dementia. A sample scenario is “Every afternoon Mr. S, a resident with dementia, attempts to leave the living area. He says he needs to visit the post office in order to retrieve his pension check.” For each scenario, participants were asked to indicate how strongly they experienced two positive (calm and happy; $\alpha = 0.78$) and two negative emotions (angry and distressed; $\alpha = 0.77$; 1 = *not at all* to 5 = *very strongly*). Two mean scores were computed for positive and negative emotions, which were negatively intercorrelated ($r = -0.36, p < .01$). Higher scores indicate a stronger experience of positive or negative emotions in daily interactions with persons with dementia in a care setting, thus representing situation-specific job-related affective well-being. *Sense of competence* was assessed with the 17-item “Sense of Competence in Dementia Care Staff” scale ($\alpha = 0.88$; Schepers et al., 2012). Participants were asked to evaluate their own abilities in working with persons with dementia (1 = *very well* to 5 = *not at all*). After reverse-coding, a higher score on this scale denotes a more positive perception of one’s ability to provide effective dementia care.

Results.—Table 3 depicts correlations between study variables. Hierarchical regression analyses were performed to assess how much variance of each outcome variable is explained by malleable and fixed mindsets (Table 4). In all analyses, we accounted for tenure, gender, and age, as these have been shown to be related to our outcome variables (Ilhan et al., 2008). We z-standardized age and tenure before entering them into the regression. Similar results were obtained when conducting the analyses without the covariates.

Job-related well-being variables were regressed independently on mindsets. When regressing disengagement on both mindsets ($R^2 = 0.08$), we found that a malleable mindset negatively predicted disengagement ($b = -0.14, p = .02$), whereas a fixed mindset did not ($b = 0.04, p = .29$). Furthermore, exhaustion and job satisfaction were not predicted by either a fixed or malleable mindset (exhaustion: $R^2 = 0.14$, job satisfaction: $R^2 = 0.03$). Additionally, neither mindset predicted overall job-related affective well-being ($R^2 = 0.10$), but significant effects were found for situation-specific affective well-being (positive emotions: $R^2 = 0.11$, negative emotions: $R^2 = 0.11$). A fixed dementia mindset predicted lower levels of positive emotions ($b = -0.16, p < .01$) and higher levels of negative emotions in dementia care-specific situations ($b = 0.09, p = .02$). In contrast, a malleable dementia mindset predicted lower levels of negative emotions in such situations ($b = -0.15, p = .01$), though it did not predict positive emotions ($b = 0.03, p = .72$). We also regressed sense of competence on both mindsets ($R^2 = 0.06$); a malleable mindset positively predicted the evaluation of individuals’ skills in dementia care ($b = 0.12, p = .03$), whereas a fixed mindset did not show significant effects ($b = -0.04, p = .36$).

Discussion

Applying mindset theory (Dweck & Legget, 1988) to dementia care, we sought to capture individual differences in how care professionals view persons with dementia, and we expected that it would help to predict care professionals’ well-being. Following several steps of scale development, we assessed content adequacy (Study 1) and comprehensibility (Study 2), scale properties (e.g., factor structure, convergent and discriminant validity, Study 3) as well as model fit, internal consistency, and criterion-related validity (Study 4) of our new scale. Our findings demonstrate that the new measure of dementia mindsets is valid, reliable, and predictive of some aspects of job-related well-being.

Factorial Structure of the Dementia Mindset Scale

Contrary to prior research showing one underlying factor of mindsets where malleable and fixed mindsets represent opposite ends of a continuum (Dweck et al., 1995), our scale displays a two-factor structure in various analyses throughout this project, suggesting that individuals can hold both mindsets simultaneously. This is also supported by the moderate, negative correlation of the two factors. This co-existence within one individual may reflect the complexity of mindsets in the context of dementia. It indicates that as in other domains (perceived emotions across cultures; Spencer-Rodgers et al., 2010), dementia caregivers can hold contrasting views within themselves and be accepting of such contradiction. For example, a care professional might experience conversations with persons with dementia as meaningful, but at the same time believe that the impact of such interactions on dementia symptoms is negligible. In other words, some may embrace both the person-centered approach to care and the biomedical view. Because this study is dedicated to scale development, we did not investigate within-person contradiction in mindsets and how it might affect well-being at work. Future research should address this question. Moreover, we hope that future research also further investigates the psychometric properties of the scale in other—preferably larger—samples. In the end, confidence in scale validity and reliability is boosted by replication of results in independent studies.

Dementia Mindsets and Other Constructs

The assessment of construct validity of dementia mindsets gave insight into the relationship between dementia mindsets and similar as well as dissimilar constructs. The new Dementia Mindset Scale showed a moderate relation to measures of attitudes toward persons with dementia that incorporate a person-centered approach to care. In contrast to existing measures, dementia mindsets are composed of multiple aspects including the perception of an individual’s active or passive role in the life of a person with dementia and the level of person-centered care. Although

Table 4. Coefficients of Regression Analyses in Study 4

	OLBI—exhaustion			OLBI—disengagement			JAWS			Job satisfaction		
	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β	B	SE (B)	β
Constant	2.33			2.51			3.67			5.04		
Age ^a	-0.12***	0.044	-0.22	-0.02	0.033	-0.06	0.14***	0.049	0.24	0.17	0.123	0.12
Gender ^b	0.07	0.121	0.04	0.09	0.090	0.07	-0.09	0.133	-0.05	-0.31	0.331	-0.07
Tenure	0.20***	0.043	0.37	0.07**	0.031	0.18	-0.16***	0.047	-0.28	-0.16	0.118	-0.12
Malleable	-0.01	0.081	-0.01	-0.14**	0.060	-0.18	-0.04	0.089	-0.04	-0.02	0.224	-0.00
Fixed	0.07	0.056	0.09	0.04	0.041	0.08	-0.02	0.061	-0.03	-0.14	0.154	-0.08
R ²	0.14***			0.08**			0.10***		0.03			
F(df)	5.27 (5, 159)			2.74 (5, 159)			3.38 (5, 159)		0.95 (5, 151)			
ΔR^2	0.01			0.05**			<0.01		<0.01			
Sense of competence in dementia care												
Situation-specific positive emotions				Situation-specific negative emotions								
B	SE (B)	β	B	SE (B)	β	B	SE (B)	β				
Constant	3.57			1.81			3.46					
Age ^a	-0.13***	0.045	-0.23	0.01	0.031	0.04	0.02	0.031	0.05			
Gender ^b	-0.22	0.123	-0.14	-0.04	0.085	-0.03	-0.10	0.086	-0.09			
Tenure	0.05	0.043	0.10	-0.03	0.030	-0.07	-0.03	0.030	-0.09			
Malleable	0.02	0.082	0.03	-0.15***	0.057	-0.20	0.12*	0.057	0.17			
Fixed	-0.13***	0.057	-0.22	0.09**	0.039	0.19	-0.04	0.040	-0.07			
R ²	0.10***			0.11***				0.06*				
F(df)	3.75 (5, 159)			3.85 (5, 159)				1.94 (5, 159)				
ΔR^2	0.05**			0.10***				0.04**				

Notes: JAWS = Job-Related Affective Well-Being Scale; OLBI = Oldenburg Burnout Inventory. ΔR^2 refers to the change in explained variance when adding fixed and malleable mindsets as predictors (i.e., after accounting for demographics). Regression coefficients are from the final model.

^aAge was assessed in decades (1 = 19 or younger; 6 = 60 or older).

^bGender was coded as 0 = female and 1 = male.

* $p < .10$, ** $p < .05$, *** $p < .01$.

the Dementia Mindset Scale shows overlap with similar constructs, it captures unique variance and is therefore not redundant with existing constructs. Especially the fixed dementia mindset seems to explain a unique aspect in comparison to existing measures in how dementia is viewed by care professionals, as the associations with similar measures are weak or very weak. This indicates that no prior scale sufficiently captures an individual's perception that dementia symptoms simply cannot be influenced by physical or social adjustments. Results suggest that dementia mindsets capture unique aspects of individual differences in care professionals that so far went unrecognized. Finally, the memory performance mindset and the Dementia Mindset Scale were weakly related. The absence of a strong association is in line with findings of previous research that suggest a domain specificity of mindset measures (Dweck et al., 1995). Note, however, that while past research shows no association between different mindset domains, in the current study dementia mindsets and memory performance mindsets were significantly though weakly correlated. We suggest that this is due to the contextual overlap between these two mindset domains, as both concern the malleability of *memory* whether it is in the context of normal or pathological aging. In summary, our findings provide the first evidence that the new Dementia Mindset Scale shows satisfactory convergent and discriminant validity.

Predictive Strength of Dementia Mindsets

Dementia mindsets predicted some aspects of care professionals' job-related well-being in the expected direction. Specifically, dementia mindsets predicted disengagement (a facet of burnout), situation-specific emotions when facing challenging interactions with clients with dementia, and sense of competence in dementia care. However, neither mindset predicted overall job-related affect and satisfaction. Note that such outcomes are also determined by a variety of other factors, such as workload, job autonomy, social support by supervisors and colleagues, or pay (Spector, 1997). Furthermore, it seems that dementia mindsets display higher predictive validity when assessing job-related affective well-being (experienced positive and negative emotions) specific to dementia care situations rather than the job overall. These findings are, as previously mentioned, in line with prior studies on the domain specificity of mindsets (Dweck et al., 1995; Hughes, 2015; Schroder et al., 2016). They indicate that dementia mindsets predict outcome variables that are specific to the context of dementia care more strongly than general well-being outcomes at work.

Application of the New Dementia Mindset Scale

Based on the theoretical basis of dementia mindsets and the wealth of past research in other mindset domains showing that mindsets are amenable to intervention (Donohoe et al., 2012), our research points at the opportunity to

design new intervention modules that aim to alter mental frameworks of dementia care professionals and thereby foster the improvement of care. For instance, a successful mindset intervention in the educational domain (1) provided individuals with theoretical knowledge about mindsets, (2) asked individuals to subsequently write about an occasion in which they personally successfully applied a malleable mindset, and (3) asked individuals to write an encouraging letter to persons in a similar situation (Yeager et al., 2016). In the context of dementia care, an intervention could be designed along these lines and would teach care professionals to think and act out of a malleable dementia mindset perspective. This would entail increasing awareness of current mindsets, strengthening the malleable mindset, and practicing how to approach challenging care situations with this mindset in mind. Recent studies suggest that mindset interventions are particularly effective for individuals who struggle or experience problems in a relevant domain (Sisk et al., 2018). The Dementia Mindset Scale could be used to identify training needs and specifically provide training for those in need and therewith contribute to the improvement of care. The scale can further be used to evaluate the added benefit of a mindset module in staff trainings, by assessing change in dementia mindsets (pre- vs. posttraining) as a mechanism underlying longer-term changes in staff behavior and well-being.

Limitations and Future Research

The new Dementia Mindset Scale captures individual differences in care professionals in contact with persons with dementia, highlighting an important personal characteristic. Nevertheless, several limitations deserve mention. First, we did not account for social desirability. Future studies may evaluate the role of social desirability as malleable dementia mindset items include aspects of person-centered care, which is often perceived as the gold standard of dementia care (Brooker, 2003). Second, our studies were conducted in Germany. To what extent cultural differences affect the nature, measurement, and predictive validity of dementia mindsets has yet to be explored. Assessing equivalence of the measure across cultures in future studies would allow for the application and comparison across cultures (Milfont & Fischer, 2010).

The new scale can be used in care settings to evaluate dementia mindsets and in research to better understand the impact that dementia mindsets have on various outcomes. Our findings provide first insights in this direction. They suggest that dementia mindsets bear the potential to facilitate certain aspects of well-being in care professionals. Future research may focus on the predictive strength of dementia mindsets for other relevant outcome variables in the work context (such as acceptance, commitment, and organizational citizenship behavior) both in the short and long term. Scholars may also consider populations from other countries and cultures, because there may be differences in the extent to which people from different cultures believe

human attributes are changeable (Haimovitz & Dweck, 2017). Moreover, future research could also address different populations relevant in the provision of care of persons with dementia. As much of dementia care, especially in earlier stages of the disease, is provided by family caregivers, future studies may focus on the validation of the new Dementia Mindset Scale in this population.

Funding

None declared.

Acknowledgments

The authors would like to thank the care professionals who made time to participate in these studies. We would also like to highlight our appreciation to everyone providing and facilitating person-centered care. You make a difference every day.

Conflict of Interest

None declared.

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